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AUTHOR Call, Vaughn R. A.; And Others
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ABSTRACT

This monograph relates in considerable detail the procedures and experience of the Career Development Study in the relocation of 6,798 respondents to the first wave of a panel study. Following an introduction discussing the problems related to tracking, the design to track these young people who were high school juniors and seniors in 1965-66 is briefly outlined. The next section describes the development of the tracking strategy. Four studies discovered through a literature search that represented different tracking methodologies are first overviewed. Six major areas in which decisions must be made prior to initiating a panel research design utilizing previously collected time 1 data are then outlined: (1) data documentation, (2) characteristics of the time 1 respondents and their families, (3) time since initial contact, (4) personnel, (5) facilities, and (6) budgets. The next section describes the tracking sequence, consisting of advance notice, mail tracking (parents), mail tracking (respondents), and telephone tracking. Experience in tracking one individual is then recounted. The six principles upon which successful tracking performance is based (planning, personalization, personnel, patience, persistence, perfection) are explicated before actual experiences in locating current addresses for the study respondents are related. Response and cost are discussed. (Correspondence materials are appended.) (YLB)

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NOTES ON TRACKING RESPONDENTS IN THE CAREER DEVELOPMENT STUDY

"Entry Into Careers"
Grant NIE-G-79-0046
National Institute of Education

Vaughn R.A. Call
Luther B. Otto
Kenneth I. Spenner

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Boys Town Center for the Study of Youth Development

Boys Town, Nebraska 68010

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Career Development is a project of The Boys Town Center for the Study of Youth Development.

The Center was established in 1972 by Father Flanagan's Boys' Home. Staff operations began in the fall of 1976. The Center seeks to conduct significant research and provide useful knowledge that is relevant to the design of social policies and rehabilitation programs for youth and families.

The Career Development Project represents a long-term institutional commitment to the generation and dissemination of career development information. The project is currently examining the process by which individuals enter careers. The project is directed by Dr. Luther B. Otto. He is assisted by Drs. Vaughn R. A. Call and Kenneth I. Spenner.

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Introduction

The task of locating an individual's current address is hardly a novel phenomenon. Each day thousands of people are the subject of such searches. Often the act of "tracking down" an individual is construed in negative terms. We envision credit, governmental, or law enforcement agencies and businesses diligently and systematically searching for debtors, potential contributors, subversives, and criminals who seek to hide their whereabouts. Little thought is given to the more benign daily uses of techniques to locate current addresses for old friends or relatives, former high school and college classmates, next of kin, alumni of various organizations, former participants in medical or social surveys or experiments, previous donors to charities and institutions, and individuals on mass mailing lists. In our highly mobile and complex society, locating a current address is a commonplace activity.

Unfortunately, telephone books are out of date before the ink dries and the book bound. As individuals and families have increased residential mobility, the ease of locating an address decreases and the need for information on how to locate individuals increases. Events of the last few years have substantially increased the need to how to locate individuals. Consider the following:

--An estimated 300,000 civilians and former U.S. military personnel were exposed to radiation in nuclear explosions such as in the "Smoky" nuclear test in 1957. These individuals appear to have high rates of leukemia. Their medical prognosis may relate to early diagnosis and treatment.

--During World War II, an estimated 4.5 million workers in U.S. naval shipyards received potentially hazardous exposure to asbestos. These individuals face possible higher incidence of cancer, asbestosis, and mesotheliona (and irreversible, fatal lung disease). Again, early diagnosis and treatment is in their own best interests.

These are examples of situations that have resulted in requests or demands that the government or medical authorities locate and notify the individuals of potential medical problems. Such large-scale tracking endeavors require a well-planned and executed tracking methodology. A "model" methodology is largely nonexistent, however. In spite of the wealth of individual information on file, the Army has on at least one occasion cited its inability to locate former "Smoky" participants (Washington Post, 1978). Thus far the federal government and medical officials have resorted to "passive" tracking of individuals through the media, physicians, hot-lines, and examination of individuals still in government employ. These techniques focus on getting out information about the problem, then await the affected populations to respond. While the passive approaches may result in many people checking with their doctors, thousands of people who are not aware that they were part of an experiment or a test are typically missed. As more of these medical situations come to light there will be an increased need for cost-efficient methods for locating large numbers of individuals.

Aside from medical applications, there has been a recognized need in the social sciences for better tracking procedures. Over a decade ago, Eckland (1968) observed that researchers contemplating panel designs had little technical information to consult other than their own experience and the personally communicated do's and don'ts of some of their colleagues.

While there have been a number of articles and reports outlining the experiences of researchers who, successfully or otherwise, have engaged in large-scale panel studies (e.g., Clarridge, Sheehy and Hauser, 1976, 1978; Temme, 1975; and Carrel, Potts and Campbell, 1975; Willits, Crider and Bealer, 1969), Eckland's comments on the state of tracking methodology are still applicable today. There is a growing number of researchers doing follow-up studies. However, the procedures and results of their studies are scattered around in a large number of journals and unpublished reports. The literature on tracking techniques and their effectiveness continue to be largely non-cumulative, unsystematized and largely inaccessible.

Why haven't government or medical officials pursued more active tracking procedures? Why aren't more panel and follow-up studies being done? While many reasons are proffered, there are a few that are usually mentioned in discussions disparaging the potential usefulness of recontacting individuals.

The most immediate negative response is an economic argument. Substantial cost may be incurred in maintaining or renewing contact with individuals 5, 10, 15 and more years later.

A related argument is the time factor involved in panel studies. It takes time to locate individuals. Researchers can't devote five or ten years of their career to one project waiting for relevant data to inform publications if they are concerned about promotions and job security. For long-term projects, a researcher must be tenured to remain at an institution long enough to conduct the project. Government officials and legislators have many questions that require panel or follow-up data, but they don't have the time to wait for the proper information to be gathered.

In panel designs, time poses additional problems. First, theories of and practices in instrumentation change. New hypotheses and better measures are developed. Slight changes in measures or coding schemes may result in variations in scores attributable solely to the change in instrumentation. Thus, for example, an uninformed decision to change the coding of jobs from the 1960 Census Occupational Classification System used in a base-line study to the more elaborate categorization of the 1970 system in subsequent follow-ups may result in alleged changes in jobs that are spurious. A related problem is that the meaning of concepts for respondents may have changed over time. For example, questions referring to the head of household may elicit a male role response in the 1950's but not in the 1980's. The referent has changed even though the question is the same. Finally, elapsed time between measures and subsequent follow-ups increases the difficulty in locating individuals as elapsed time increases.

The apparent change in public non-receptivity to surveys and government intervention in recent years is also given as a potential reason to avoid recontacting individuals. Concern for privacy has risen dramatically over the last decade. For a researcher this translates into declining response rates and sample attrition in panel and follow-up studies. Pessimism over peoples' willingness to divulge an individual's whereabouts to "Big Brother" dampens the desire of some government officials to even try to recontact individuals.

Finally, the lack of established follow-up procedures is a major reason that panel designs have received only moderate use compared to other research designs. While the rhetoric extolling the virtues of panel research for scientific study of change and causation increases, there

continues to be a disparity between longitudinal concepts and the longitudinal methodology. As Kodlin and Thompson (1958) note, it is this disparity that produces uncertainty concerning the value of panel or follow-up designs.

The purpose of this monograph is to relate in considerable detail the procedures and experiences of the Career Development Study in the relocation of 6,798 respondents to the first wave of a panel study. Given the lack of detailed accounts of tracking experiences there is an important need for additional information on tracking procedure effectiveness and a "system" of procedures that reduces panel attrition. In this monograph we review four large follow-up studies that informed our tracking effort, develop a multi-method approach to reduce panel attrition, and report the outcome of our use of the approach.

The Career Development Study

In 1966 a statewide study of the educational and occupational plans of Washington high school students was conducted. At that time, 6,798 juniors and seniors enrolled in public high schools in the state of Washington during the 1965-66 school year filled out a questionnaire. Extensive data was collected from these students regarding high school experiences such as curriculum, grades, extracurricular activities, school friends, attitudes towards school, and their study abilities. In addition, the students were asked to relate their aspirations and expectations for future educational and occupational achievements.

Over 13 years passed and the Career Development Study was initiated to examine the educational and occupational attainments of young people. One of the major objectives was to empirically establish the determinants of career lines. The research problem required individual data from a large group of males and females who have made the transition out of school and into a career. In the Fall of 1977, the decision was made to relocate the 6,798 former juniors and seniors from Washington high schools who were now typically 29 to 31 years of age.

Three major considerations informed the design of the tracking effort. First, a decision had not yet been made concerning the method of collecting data from the sample, but it was evident that we needed the current address and telephone number for each respondent, regardless of the survey methodology that would eventually be used. Second, funding considerations essentially limited the period of tracking, data collection and data preparation to a three year period. After considering the length of time required for accomplishing the major components, we established the goal of

obtaining current addresses for at least 90 percent of the 1966 respondents within a six month period. Third, at the time there was considerable discussion among researchers concerning the changing public receptivity to interviews, questionnaires and other forms of social science research. The general consensus was that the public was becoming increasingly less likely to cooperate. Therefore, it was decided that the design of the tracking effort should be structured to avoid contact with the original respondent whenever possible. The goal was to reduce the opportunity for a former respondent to refuse to participate, thereby precluding a major cause of sample attrition.

The Development of a Tracking Strategy

As noted earlier, Eckland (1968) commented that researchers have to rely on their own experience or the personally communicated experiences of others in developing a panel research design. The methodology of tracking individuals is now beginning to appear in the literature, but, unfortunately, the emerging literature generally lacks detailed information regarding the methodological procedures utilized and the relative costs and relocation rates. We initiated our building of a research strategy by an intensive search of the available literature seeking the major highlights of successful follow-up studies from the past. Four studies were particularly useful inasmuch as they set the major parameters of our tracking design. Following is a short overview of these studies, each representing a different tracking methodology.

The Baltimore Chronic Illness Follow-up

The Baltimore follow-up (Bright, 1967) consisted of a very successful, multi-method strategy for relocating a city household sample. The original survey was conducted in 1953 and 1954 with the follow-up beginning in 1960 and completing two years later. The purpose of the follow-up was to conduct a mortality analysis. The original household sample consisted of 11,324 persons aged 0 - 70.

Although specific details are not given concerning the type and amount of identifying information on respondents available to the trackers, it appears that only the respondent's full name and household address, possibly supplemented by some initial survey information, was available.

The tracking procedures used were these:

1. Telephone calls were placed to respondents with listings.

2. Individually prepared letters were sent to those not reached by telephone for whom provisional addresses had been obtained through telephone and city directories.

3. For those reached neither by telephone nor letter, contacts were made with relatives, friends, present or past neighbors, physicians, public health offices, nursing homes, schools, employers, morticians, unions, and a variety of other city, state, and federal government agencies.

These methods were pursued for 16 months with a staff of two full-time and two part-time persons. Thereafter, an additional 8 months of intensive work with a new tracking staff was devoted to relocating the remaining "hard-core" following this procedure:

4. Tracers were sent to neighborhoods where respondents were known to have lived seeking leads from neighbors, storekeepers, bartenders, and others who might have known individual participants. All tracing possibilities were exhausted.

Procedures 1 - 3 resulted in successful relocation of 77.3 percent of the original respondents. Implementation of the intensive tracking techniques increased the overall relocation rate to 96.1 percent.

Using the data presented in Table 1, Bright reports that use of telephone tracking techniques is not always a sufficient method to recontact respondents. A higher percentage of non-whites were relocated using home visits than telephone procedures. The addition of alternative tracking methods reduced non-white attrition. Moreover, the more intensive tracking procedures also reduced attrition based on other characteristics as well.

Table 1. PERCENT OF BALTIMORE CHRONIC ILLNESS HOUSEHOLD SURVEY POPULATION TRACED BY PROCEDURE USED AND RACE.

Procedure	Percent Whites Located	Percent Non-Whites Located
Telephone	56.2	38.2
Letter	7.7	7.8
Home visits	26.5	42.9
Death Records	6.6	5.1
	97.0	94.0

Individuals aged 40 and over were easier to locate by routine telephone methods than were individuals aged less than 40. If more intensive procedures had not been used, Bright estimates that about one-fourth of the white and two-fifths of the non-white young adults in the sample would have been untraced. About 45 percent of the non-whites with incomes under $2,000 would not have been relocated if only routine methods were used. Likewise, people living in one-person households or individuals who reported being divorced or separated at the time of the original survey were more difficult to locate. Finding these individuals required more intensified procedures.

In addition to the general population survey, Bright reports on a subsample demonstrating many of the characteristics of hospital or clinic populations. This group was easier to locate than individuals in the general population survey because these people were generally older and had additional information recorded about them that made tracking easier.

In summary, this follow-up study demonstrates that it is possible to trace most individuals in a general population sample within a six to seven

year period. The key to the success of this project is the use of at least four different tracking methods.

The Adolescent Society Follow-Up

Temme's (1975) Adolescent Society Follow-Up is noteworthy because of the computerized efficiencies and multi-method tracking strategies it employed in relocating students who were enrolled in 11 high schools located within 100 miles of Chicago. Coleman's (1967) research chronicle reveals an original 1957 sample of 9,783 persons. In the fall of 1958, the 1,030 seniors who indicated they were going to college were followed-up. In the spring of 1961, six of the original schools were revisited and the seniors (who were freshmen in 1957) were recontacted (612 out of 996 responded). The 15-year follow-up (1972-75) sought to relocate 9,033 of the original respondents (excluding about 750 respondents from one high school that served recent immigrants).

A moderate amount of information was available to inform the 15-year tracking effort: respondent's name and address for 1957, parents' name and address for 1957, 10-year class reunion lists from 23 of 39 classes involved in the original study, identification of respondent's friends, and information from the original study and two subsequent sub-studies. This information was used to carry out the procedures listed in Table 2. By the summer of 1973 the overall relocation rate reported was 87.5%. However, only 46.5% of the 9,033 former students had responded to the survey. At that time the project was interrupted for financial reasons.

Table 2. PERCENT OF ORIGINAL ADOLESCENT SOCIETY RESPONDENTS RELOCATED BY PROCEDURE USED.

Procedure	Percent Located
1. Creation of computer file of 1957 names and addresses	---
2. Telephone directory search	---
3. March-Summer 1972: As many as three mailings with postcard and one telephone contact with parents at 1957 address or a new address based on telephone search	46.9
4. Fall 1972: Class reunion list searched; letter sent to confirm addresses	18.7
5. Fall 1972: Community canvassing by local (volunteer and paid) resource people and sociometric mailing to friends identified on data file	9.9
6. March 1973: Questionnaire mailing that included list of unlocated classmates and requests for information on their whereabouts	4.8
7. Miscellaneous	5.3
8. Deceased	1.9
TOTAL	87.5

In May 1974 Temme relocated and the project was revived. The goal was to interview as many of the 4,831 remaining individuals as could be contacted given a $30,000.00 budget constraint. Resumption of the tracking effort followed these procedures:

1. A computerized file of all located and non-located respondents was created.

2. Summer 1974: Search for addresses and telephone numbers with the assistance of relatives, employers, friends, and telephone directories.

3. Summer 1974: Telephone call to telephone numbers obtained.

4. Summer 1974: Letter sent to addresses obtained.

5. Summer 1974: News releases to newspaper and radio stations.

6. Newspaper ads listing 1,803 unlocated names published in community newspapers.

7. Telephone contact attempted.

Unfortunately, a percentage breakdown of the effectiveness of each stage of the procedures was not reported. By July 1975, 7,096 (78.6%) respondents were located in the combined tracking efforts. The discrepancy between the Summer 1973 and July 1975 reported relocation rate (87.5% vs. 78.6%) was due to the fact that some respondents moved in the interim and were not relocated such that not all of the addresses were verified in 1973.

Temme provides only limited cost information. He notes that it cost about five dollars to prepare each personalized letter mailed to parents. Use of newspaper ads (along with telephone expenses) also cost an estimated five dollars per respondent located. While these are only limited, approximate figures, the estimates provide some useful information for cost accounting.

Temme's (1975) monograph is useful because it provides insight into the techniques that prove successful. Following are a few of the major points:

1. Computerization of mailing lists, letter generation, and record keeping reduces the number of staff needed, provides readily available response rates and address information, and reduces costs.

2. About half of the families had not moved from the community since 1957. Getting responses from parents is the most productive procedure.

3. Reunion booklets provide addresses that prove successful if an address can not be obtained from parents.

4. Parents may refuse to provide addresses claiming that their son or daughter is not interested. Frequently, the individual is very cooperative and interested when subsequent contact is made. Conversely, some parents are very helpful while their son or daughter is reluctant to participate.

5. Paying local groups such as a PTA or honor society to locate respondents is a useful tracking procedure.

6. Friendship information that may be available from the original data can be effectively used to contact individuals who are more likely to know where the desired respondent currently resides.

7. Mailing a list of non-located individuals with the questionnaire to individuals already located results in about a 5% increase in the total number of current addresses for respondents.

8. Trying to contact an individual by mail is quite different from trying to contact the same person by telephone. Just because a mailing address is available does not mean the individual can easily be reached by telephone.

9. Getting the local news media to publish reports about the study legitimizes the study in the community.

10. Paying for ads in local newspapers listing the names of people still being sought is very useful. Out of 1,803 names of individuals published about 419 people were eventually located and interviewed.

In summary, the Adolescent Society 15-year Follow-Up demonstrates the feasibility of following-up a large number of former high school students. Temme attributes the success of the project to computerization and to the use of "Madison Avenue" techniques.

The Rural Pennsylvania Study

The Rural Pennsylvania Study (Willits, Crider and Bealer, 1969) is unique among large scale follow-up studies for two reasons. First, it incorporates an experiment for analyzing the effectiveness of a number of procedures for relocating respondents. Second, the follow-up procedures are outlined in detail and are evaluated for effectiveness.

A total of 2,810 persons were initially contacted in 1947 when they were sophomores in rural Pennsylvania high schools. About a third of these individuals were farm residents in 1947. Intermittent contact (unspecified) was maintained with the original respondents over the next 10 years and, in 1957, 2,344 respondents (83 percent of the original cohort) were relocated and interviewed. In 1966, the project was reactivated. Using letters and visits to the high school communities, current addresses were obtained for 2,236 (95.4%) of the 2,344 respondents who participated in the 1957 survey.

While the authors present some information on the major follow-up, more extensive detail is provided for a modest attempt to evaluate the relative effectiveness of various tracking procedures. From the 2,344 respondents a stratified sample of 320 individuals was selected according to sex, marital status, and migrant status. The 320 respondents were tracked using each of 4 different experimental conditions: mail contact, telephone contact, community visits, and public record searches.

In the mail and telephone conditions the attempt was to find the same 320 respondents by alternate methods. This was not the case for community visits where the 97 individuals who were not tracked by telephone were augmented by 63 individuals from the large sample who had not yet been located by telephone or mail. It was assumed that if individuals could be located by telephone, they could also be located by a personal visit. Because of this assumption the small number remaining untracked had to be augmented so that there would be a sufficient number of cases for analysis. This same assumption was applied to the public record search condition.

The information available to assist the tracking effort varied by tracking technique being evaluated. Usually the information consisted of

the respondent's name, 1947 post office designation, 1957 married name and address (age 26-28), parent's or guardian's name and 1947 address, the name and address of the high school attended in 1947, and the reported employer in 1957. The 1967 tracking procedures for the 4 experimental conditions and their relative success are reported in Table 3.

Table 3. PERCENT OF RURAL PENNSYLVANIA RESPONDENTS RELOCATED BY PROCEDURE USED.

Procedure	Percent Located by Procedure
Mail Contact Condition (N = 320)	
1. January 1967: first class letter mailed to 1957 address with postcard enclosure.	48
2. February 1967: second mailing	32 (letter undelivered)
	20 (letter delivered but no response)
Telephone Contact Condition (N = 320)	
1. Telephone numbers were obtained through area telephone information operators using respondent's name, parents' names, and names of extended family.	
2. Telephone calls placed to 1947 communities	85
3. Telephone calls placed to 1957 communities (if different)	80
Community Visit Condition (N = 157)	
1. Visit to 1947 post office	46
2. Visit to 1957 post office	24
3. Visit to 1947 school	73
4. Visit to 1957 employer	60
5. Visit to 1947 residential neighborhood	82
6. Visit to 1957 residential neighborhood	59
Public Record Search Condition (N = 140)	
1. 1947 marriage license search	19
2. 1957 marriage license search	22
3. 1947 real estate transfer search	10
4. 1957 real estate transfer search	9
5. 1947 registration of wills search	6
6. 1957 registration of wills search	6

Mailing a letter to the 1957 address was effective in reaching approximately 68% of the respondents. Willits, Crider and Bealer note that two-thirds of the individuals who replied to the mail contact had moved from their 1957 address. The mail was delivered to a substantial number of movers. However, about one-third of all the letters were returned as undeliverable. The first mailing brought in three-quarters of the current addresses obtained. The second mailing resulted in the remaining one-fourth responding.

The telephone contact condition was the most successful. Trying to contact parents by telephoning the 1947 community is more effective than telephoning respondents at their 1957 address. The authors note that from 1 to 27 telephone calls were attempted to obtain a current address. In most cases the address was obtained in only 1 to 3 attempted calls. A telephone contact with a close relative and even distant relatives usually resulted in a current address for the respondent.

The post office, the high school, places of employment, and the local neighborhood were contact points during the community visit condition. In rural areas, inquiries at a local post office usually resulted in a quick referral to other friends and relatives of the respondent or in a recall of information about a respondent. Occasionally, records spanning many years were examined. In urban areas the opposite was true. There was almost no recollection of the respondent and records seldom covered more than the required two years. While the procedural formalities of a request for an address were followed, these requests were seldom successful in cities and urban areas.

Twenty-year-old school data was relatively difficult to locate and provided very little new information. When information was obtained it

usually led to a friend or relative who provided a current address. While about 75 percent of those sought were found via school records, most of the school record searches resulted in only indirect leads that had to be followed-up.

In smaller places of employment, the employer could often recall the respondent or continued to have contact with the respondent. In larger businesses personnel records became more important and governing policies had to be observed. About 60 percent of the respondents sought were contacted as a result of information obtained from former employers. About a fifth of these individuals were still working for their 1957 employer.

The local independent grocer, the corner pharmacist, and beauty salon operators were most informative neighborhood contacts because they kept records or appointment books that helped them learn the full name of their customers. However, radical changes in the racial or cultural composition of a neighborhood usually cut off all ties with former occupants. The stability of neighborhoods may also explain why visits to the parent's 1947 neighborhood were more productive than visiting the respondent's 1957 neighborhood. In general, the authors found that about three or fewer contacts were needed before a neighborhood search resulted in a current address.

Searches of public records such as marriage licenses, real estate records, and wills were not very effective. A great amount of time was involved and only a few respondents were located.

In summary, the Rural Pennsylvania Study suggests the following:

1. Nearly all respondents in a follow-up study can be located after a period of 10 or 20 years if the study design emphasizes flexibility and perseverance in tracking.

2. Sex and marital status do not affect contact rates.

3. Migrants are less likely than non-migrants to be recontacted, but there are not large differences in the contact rates.

4. About half the subjects in a follow-up study can be located by sending a first-class letter to their last known address.

5. Eighty percent of the subjects in a follow-up study can be located by telephone even though 10 years have passed since the last contact.

6. Community visits, though more costly, can be effective when mail and telephone tracking techniques fail.

7. Searching public records is an ineffective and inefficient tracking technique.

The Wisconsin Follow-up

One of the most successful recent large-scale tracking efforts was accomplished by William H. Sewell and Robert M. Hauser in their 1975 17 year follow-up of Wisconsin high school students (see Clarridge, Sheehy, and Hauser, 1976, 1978). The search consisted of an effort to relocate a subsample of 10,317 subjects who were seniors in Wisconsin high schools in 1957.

The distinguishing characteristic of the Wisconsin search procedure is that it relied primarily upon use of the telephone to relocate a state sample.

Since the researchers wished to avoid direct contact with the respondents before the survey interview and to minimize the opportunity for refusal to participate, respondents were traced through their parents wherever possible. This search was based upon the reported parent's 1957 address and occupation. A re-study of the respondents, seven years after the initial study (1964), had located 87.3 percent of the original respondents, giving trackers access to some basic identifying information

that was no more than 10 years old: respondent's name and address in 1964, respondent's parent's name and address in 1964, schools attended since 1957, respondent's and spouse's (if female and married) 1964 occupation, and military experience since 1957. Thus there was a substantial amount of information to begin the tracking effort.

Given limited funds, the researchers divided the sample into 10 equal-sized groups based on sex, socioeconomic status, and mental ability scores. These groups were traced sequentially so that the tracking effort could be terminated with the completion of any one group without jeopardizing the random subsample. Table 4 lists the procedures that were employed, in the order of their use, together with the reported relocation rates by procedure for one of the ten groups.

Table 4. PERCENT OF WISCONSIN RESPONDENTS RELOCATED BY PROCEDURE USED FOR ONE OF TEN SUBGROUPS.

Procedure	Percent Located
1. Telephone book search for parents	83.0
2. Telephone book search for respondents	95.0
3. Occupational leads	1.5
4. College alumni office leads	2.0
5. City directory search for neighbors	1.5
6. High schools	(N.A.)
7. Post offices	
8. Military locater services	1.0
9. Letters to other respondents	
10. Letters to individuals without listed phones	(N.A.)

For the particular group reported on in Table 4, approximately 98.6 percent of the respondents were eventually contacted. Overall, the 1975 tracking efforts successfully relocated 97.4 percent of the original target respondents establishing a new criterion by which to assess the adequacy of large-scale tracking efforts.

While no cost estimates are reported, the authors do give an estimate of the approximate time spent per case. For example, the telephone book searches for parents and respondents averaged about 17 minutes per case. Checking with employers and alumni offices took approximately 50 minutes per case. Searching city directories averaged 65 minutes per case. The rest of the techniques tried generally averaged about 90 minutes per case.

In conducting the tracking procedures the researchers discovered several consistencies in trying to track whites who had graduated from high school:

1. Individuals residing in urban areas are harder to find than those residing in rural areas.
2. Knowing previous employers is helpful in contacting males who did not go to college.
3. College alumni offices facilitate contacts with male college graduates.
4. Females are easier to contact if a spouse's name and employer information are available.
5. Access to information from schools has been largely eliminated by the Buckley Amendment to Freedom of Information Act.
6. Searching telephone books can result in potential leads on about 98 percent of all parents and respondents.

Clarridge and colleagues (1978) summarize their article by attributing their success to the extensive use of the telephone, to the organization and management of the search procedures, to the availability of several

diverse types of identifying items that could lead to the location of respondents, to persistence, and to allocating sufficient funds to accomplish the tracking task correctly. In addition to the above we could add attention to detail and carefully formulating a research design as major organizing principles.

The four studies provide examples of procedures employed in tracking several kinds of large samples including a city household follow-up, the follow-up of schools in a large metropolitan environment, and two state follow-up studies. The tracking methods employed vary from reliance upon a single technique to some combination of variants of four procedures: telephone contacts, mail-out contacts, field contacts or visits, and record searches. The choice of procedure or combination of procedures varies by the sample size, the geographical distribution of respondents, the project budget and available resources. From our review we noted that studies relying upon any single procedure tended to produce relocation rates of about 60 percent which tends to reflect the residential stability of most families over time. Studies employing some combination of procedures and greater persistence usually reported relocation rates of 85 to 95 percent and higher. On balance it became apparent that the success of tracking efforts is associated with the availability of person-specific information in the initial study, preparation and execution of the tracking design, and the use of multiple tracking procedures and persistence.

The development of our tracking strategy reflects information gleaned from many studies and our efforts to systematize the decision process. We noted that most reported difficulties encountered in tracking respondents were due to the contingencies imposed on the research by the time 1 research design. By addressing these contingencies we felt that we could

compensate for serious potential problems that cause attrition rather than trying to belatedly "fix up" a floundering panel research design. There are six major areas in which decisions must be made prior to initiating a panel research design utilizing previously collected time 1 data: 1) the data documentation, 2) the characteristics of the time 1 respondents and their families, 3) the time since initial contact, 4) personnel, 5) facilities, and 6) budgets. We outline these decision points in the sections that follow.

Data Documentation

Theoretical issues aside, one of the most crucial factors in determining the feasibility of a follow-up is the extent to which the original research design is documented and provides identifying information on the original respondents. Minimally, it is necessary to know:

1. The date the original study was conducted
2. The population sampled
3. The sampling frame
4. The method of selecting the sample (probability vs. nonprobability)
5. The response rates
6. The procedures compensating for nonresponse (substitution, etc.)
7. The research contingencies that arose (i.e., schools dropping out of the study for political reasons, etc.)
8. Publicity which affected response rates or data quality
9. The codebook used in coding all variables and constructing all scales
10. The reliability of the original data (the extent of coding error, measurement error, and noncomformity to

selected population characteristics--education, income, etc.)

11. The weighting procedures used in creating any computer records of the data

12. The names of the original respondents for each data case.

The above information permits an assessment of the quality of the time 1 data and the adequacy of the data for generalizing to the theoretically relevant populations. Naturally, the linkage of names with the correct data case is usually necessary to the follow-up endeavor. Later we will discuss a special instance where intensive amounts of information on a limited sample can compensate for the lack of names.

The 1966 data set is exceptionally well documented. The source documents include:

1. A detailed chronology of proceedings, file memoranda, and project minutes

2. All correspondence including copies of letters sent to the participating high schools

3. Records of sample selection procedures and response rates

4. Complete copies of study instruments

5. Detailed codebooks

6. Marginal frequencies for responses to all questionnaire items

7. The investigators' recollections concerning various aspects of the data gathering process.

Several additional pieces of information were available to us, including the name and address cards of each student involved in the 1966 study, interview schedules that included the names and addresses of one-fourth of the parents of the respondents, and the names and mailing lists

for a limited follow-up study of about one-fourth of the individuals that was conducted in 1971. The original interview schedules and some of the original questionnaires were on file. Unfortunately, after coding and keypunching, most of the original questionnaires were destroyed. The principal investigator of the original project was deceased, but we retained the consulting services of his project director who was an additional source of useful information. Evaluation of the data demonstrated that the coding and keypunching were accomplished reliably.

We faced two major problems concerning the names of the original respondents for each data case. First, researchers seldom anticipate the need to retrieve additional information on respondents and, consequently, provide few "anchor points" from which to track respondents in the future. The major anchor point is the individual's full name. In 1966 the respondents were asked to provide their name, their mailing address, and the high school they were attending. The researchers did not specify that the individual should record their full name, and, as a result, many respondents did not. Others provided a nickname or an abbreviated form of their name. Moreover, seldom was there a record of the individual's parents' full name. Thus, considerable ambiguity surrounds names like Bud Smith or Skip Williams. Further, the respondents were not asked to print and there was considerable difficulty deciphering the correct spelling of some of the names. In any case, the original name cards were in our possession for reference in the event questions would arise.

A second problem was the discovery of the absence of name cards for one small school (N = 79) serving several relatively isolated rural communities. Investigating further, we discovered from project records that for political reasons, the principal decided not to return the name cards and

the original principal investigators did not pursue the issue. After a personal visit from the study principal investigator, the current high school principal provided a list of the junior and senior students enrolled in that school in the Spring of 1966. Through the diligent efforts of one staff member who accepted the reconstruction of this information file as a personal challenge, 91 percent of these students were relocated and linked to their data records by asking each student to reconstruct their responses to questions about their family. In particular, how they would have responded in 1966 to questions concerning father's and mother's education, father's occupation, number of children in the family, school grades, extracurricular activities, and future educational and occupational aspirations. Based on these 1979 responses individuals were uniquely linked to the appropriate earlier data that provided the same response patterns. If there was any question concerning the linkage, a linkage was not made. While it does pose an expensive problem, the absence of names does not preclude the linkage of names to records if 1) the population of interest is small in size and relatively isolated, 2) the sampling frame is known, 3) there is a substantial amount of personal data for each case that are coded in "raw' form (not collapsed into aggregate categories), 4) competent personnel are used who are knowledgeable about tracking techniques as well as the information available for each case, and 5) the people being talked to are relatively cooperative in reconstructing possible previous responses. With adequate financing and using a process of elimination, it was possible for us to reconstruct the name-file linkages for these individuals.

Characteristics of the Wave 1 Respondents and Their Families

Having established the overall feasibility of the follow-up and noted the adequacy of Wave 1 data documentation, a number of factors affect the expected degree of difficulty for the tracking effort. The nature of the original sample places constraints on the procedures that can be used in tracking individuals.

In the past, the geographic scope of target populations has been cited as having detrimental impacts on eventual response rates. Thus, for example, Campbell and Katona (1953) categorically allowed for a 25 percent loss of cases in national panel studies. Fortunately, the methodology has progressed. Many national and multi-state studies report retrieval rates over 80 percent and many regionally restricted studies report over 90 percent found (cf. Crider, Willits, and Bealer, 1973; and Eckland, 1968). The geographic dispersion of the sample at Time 1 affects relocation efforts in two ways. The greater the dispersion, the more elaborate and more costly the tracking organization must be. However, this does not mean that regional tracking offices and managers are necessary. The more diverse the geographic dispersion, the greater the difficulty in establishing legitimacy of the study in local areas increases. For example, using the stationery of a local college or university gives credibility and legitimacy to a study in that location but perhaps very little legitimacy in a more distant place.

The problem of geographic dispersion is not serious in the Career Development Study. While the students came from 28 randomly-selected high schools, these high schools were all in the state of Washington. Even though there is dispersion across the state, the respondents can still identify with one of the major state universities. An additional problem

was that the project personnel for the Career Development Study were located in the midwest such that there was also the problem of the geographic location of the investigators to the population being studied.

The urban-rural composition of the population is known to affect tracking effectiveness (Crider and Willits, 1973; Barnes, 1972). Individuals in rural areas are easier to find due to more cohesive social networks that typically keep track of the whereabouts of most families. Social networks are generally not found to be as strong in urban areas. In the Career Development Study we have schools that serve extremely small rural communities that have only 10 to 15 juniors and seniors enrolled in the high school to large metropolitan areas having over 800 students in the junior and senior class. About two-thirds of the sample resided in the large metropolitan cities in 1966. Techniques had to be developed to overcome the problem of locating the preponderance of students residing in urban areas in 1966.

Tracking minorities is often difficult. Bright (1967) reported that blacks are harder to track than whites. Minorities, especially foreign born, are more likely to have made name changes (Wilcox, 1965). Moreover, non-whites are more likely to have an unlisted telephone number compared to whites (Glasser and Metzger, 1975). Census reports in 1960 indicate that the state of Washington had approximately 4 percent of the state population who were listed as non-white. The Career Development Study sample shows approximately 2 percent of the sample reporting that they were non-white. Thus, the racial composition of the sample did not cause undue problems in tracking the respondents.

A number of other characteristics of families and individuals have additional implications for the tracking effort. For example, families may

be very protective of information where family members are in prison or in trouble with the law (Homans, 1972). Those who move frequently are also difficult to find (Homans, 1972; and Lewis, 1972). Samples that are drawn from neighborhoods undergoing rapid change may have a lack of informal sources of information (Willets et al., 1969). Families broken by divorce or death are harder to locate (Bright, 1967). Individuals who participate in formal organizations are easier to locate that nonparticipants (Crider and Willets, 1973). Age may also be a factor as 18-34 year olds have a tendency to have more unlisted telephone numbers than those older (Glasser and Metzger, 1975). While there are no gender differences reported in relocation studies (Bright, 1967; Willets et al., 1969), single women tend to have more unlisted telephone numbers and name changes that increase the difficulty of relocation. They found single females to be especially hard to find when the primary family has been broken by divorce. Individuals in the military are very difficult to locate given their mobility and lack of social contacts in stable communities.

We conclude from the above literature that the diversity of individual characteristics in a sample bears directly on the number and type of tracking procedures to be used. Since the Career Development Study sample involves young adults, we expected greater difficulty in locating these respondents. However, the difficulty could not be compared to that of trying to locate a sample of children from divorced families.

Time Since Initial Contact

Longer time intervals since previous contact increases the difficulty and expense of tracking individuals who participated in the study. Clearly, the potential for mobility out of the community or neighborhood

increases as time transpires. But, it may be easier to locate study populations in 10- and 20-year intervals from high school graduation than it would be to locate them in 5- or 15-year intervals. Ten-year or 20-year class reunions may be extremely helpful, both in generating good will and cost reductions. However, the decision to use the 10- or 20-year intervals should not be based on convenience considerations but on the relevance of the time interval for the problem under examination. The time interval for the Career Development Study follow-up is approximately 13 years. Since the original study involved juniors and seniors in 1966, the tracking endeavor benefited from the work of reunion committees. The class of '66 held its reunion in 1976 and the class of '67 had its 10-year reunion the summer prior to the planned initiation of the proposed tracking.

Personnel

Most reports on tracking note the importance of well-trained personnel. Several capabilities are important, including: 1) an overall knowledge of the study; 2) commitment to the success of the study; 3) experience in the different aspects of tracking; 4) reliability; 5) interpersonal competence; 6) creativity; and 7) persistence. The pool of individuals having all of the characteristics cited above was minimal for the Career Development Study. Being in a research center detached from any university affiliation limited the pool of previously trained personnel for tracking. We did not have access to social science graduates or undergraduates with experience in large-scale, cross-sectional, or follow-up studies. Thus, we needed to compensate by providing intense orientation experiences and carefully devised on-the-job training programs.

Facilities

The facilities available for conducting the follow-up are a major determinant of the time and money that will be expended. If the tracking endeavor involves finding a large number of families in a "normal" population, then multiple methods of tracking are advised. Thus, facilities are needed to generate mass mailing materials, to search for leads, to do large amounts of telephoning, and to maintain records.

From the standpoint of facility needs, we were well-equipped to handle a follow-up study. Available to us were: a 13-booth telephone survey room; a full-service library that could request or obtain maps, telephone books, city directories, and other such materials to aid in tracking; a word processing system that permitted efficient generation of personalized letters in small quantities (up to about 1,000 letters); relatively unrestricted use of a PDP-11/70 minicomputer that includes a card reader, magnetic tape drives, two 88M byte disk drives, and 256K words of core storage; access to an extremely creative and competent computer programmer/software analyst with training and interests in social science research; a moderately well-equipped print shop; and negotiable access to six IBM ink-jet document printers. These services, with the exception of telephone charges and the ink-jet printers, were available to us at no direct cost. A major disadvantage of the telephone facilities was that WATS lines were not available for use. Therefore, all telephone calls were made under existing rate structures. The location of our research headquarters in an outstate location where charges were not made for local directory assistance was advantageous. Also, we were able to produce personalized letters and envelopes on IBM ink-jet printers, fold cover letters, merged mail-out materials, and stuff envelopes for about $171.00 per thousand, which was

attractive. In summary, we took full advantage of the telephone and state-of-the-art letter producing facilities available to us on-site.

Budgets

Difficulties arise in budgeting for tracking efforts not only because of the limited records of past experience, but also because of the relatively few fixed costs involved. Previous studies indicate considerable variation in costs. Consider, for example, the costs incurred in a study of relocating 125 children (111 of whom were adopted) after an interval of 16 to 21 years (Skeels and Skodak, 1965). The study was 100 percent successful in relocating participants. The investigators personally visited 208 different communities in 24 states, repeating visits as necessary to several larger communities. In terms of time the investigators spent a total of 309 work days on 55 separate trips totalling travel and per diem expense of $12,583. The estimated salary cost based on percentage of time spent in the field was an additional $18,150. Related expenses are not reported. The total cost of $30,733 averages to $245.86 per child (mid '60 economy) which, the researchers note, was considerably lower than the original estimates totalling $50,000 to $75,000 for the entire project or $400 to $600 per child. Moreover, these researchers conclude in part: "Results of the investigation indicated that with the use of proper logistics and sound planning, such studies are not only possible, but they are economically feasible and they can provide rich sources of information." We agreed with the conclusion; but, as will become apparent to the reader, these reported costs may be quite excessive given the maturing state-of-the-art of respondent tracking.

In estimating tracking costs, a reasonable rule of thumb for former student populations we developed was that approximately 55 percent of the families will still be in the same location after 13-15 years and that roughly 70 percent of the former students will still reside somewhere in the same state after the same period of time. Our experience matched that of Clarridge et al. (1978) in these details. Our experience further suggested that class reunion lists may enhance relocations by 15 percent over contacts made through parents alone. Finally, we found that 65-70 percent of the respondents can be relocated with state-of-the-art mail techniques. Using these percentages together with local costs for materials and telephoning, a rough estimate of potential tracking costs can be made.

Tracking Research Design

In deciding upon an appropriate set of tracking procedures we faced three major problems related to the feasibility of relocating the respondents. First, the names and addresses of respondents were available, but their parents' names and addresses were not. Whether one considered this to be a primary or secondary liability, the importance of lacking this information could not be underestimated. Willits and colleagues (1969) had demonstrated that follow-up studies designed to focus on respondents' parents were more successful than those designed to focus on the respondent and his family of procreation. Similarly, Sewell and his colleagues (Clarridge et al., 1976) had been extremely successful in tracking respondents through their parents. Second, we had a limited time-frame within which to contact the respondents. We realized that time for tracking needed to be budgeted liberally in as much as a substantial amount of time is generally needed to accomplish the various tasks associated with reestablishing contact with most former respondents in large panel studies. The Wisconsin (N = 9,007) study took approximately a year-and-a-half to relocate former students. Our objective was to recontact our respondents within a six month period. Third, the current investigators were no longer located in the state of Washington which posed potential problems of legitimizing the study. Given access to state-of-the-art mass mailing equipment and a well-equipped telephone survey lab, arrangements were made to conduct the study from our outstate study headquarters with the cooperation of the Social Research Center at Washington State University. Conducting the study in conjunction with the Social Research Center not only

eased the logistics of the long-range tracking endeavor, but also provided a regional identification and greater legitimacy for the tracking effort. We decided to modify the best available questionnaire methodology (Dillman and Frey, 1974) and to apply it to our tracking efforts. We employed mass mailing procedures prior to the use of the telephone tracking procedures to reduce costs and to minimize contacts with the original respondents by focusing our tracking efforts on the families rather than the respondents.

The implementation of these decisions resulted in a sequential, multi-method procedure for locating respondents. The tracking sequence was as follows:

1. Advance notice: notification was given current school officials concerning the nature of the continuing study, the proposed timetable, and an individual to contact in case of questions. The primary purpose of this letter was to inform the present school personnel concerning the study so that they would be informed and supportive if individuals made contact with the school inquiring about the legitimacy of the study.
2. Mail tracking (parents): a four-wave sequence of letters--each containing a cover letter, a return card, and a self-addressed and stamped return envelope--to be sent to the reported 1966 addresses of the respondents' parents. Since we did not have the parents' names, the letters were addressed to the last name of the student prefaced by the appropriate salutation for his/her parents (Mr. & Mrs., Mr., or Mrs.) based on the reported marital status of the parent when the student was first interviewed. The address also included the full name of the former student. Thus, an example of the full

address is, "Mr. & Mrs. Williams or Fred F. Williams." The "or" provided the postal service with additional information with which to deliver the mail to the proper family. The intent of the letter was to request a current address for the respondent from the parents. If the parents did not respond to the first letter, a second letter in a four-letter sequence was to be sent. The process continued until either the parent responded or the letter was returned undeliverable. The fourth letter in the sequence was sent by certified mail. Details of the content of the letters and of the enclosed return information card appear in the examples in the Appendix.

3. Mail tracking (respondents): In cases where parents did not respond to the four-wave sequence of letters or letters were returned by the Post Office marked "Undeliverable," a three-wave sequence of letters was designed to be mailed to the respondents using their married names and addresses obtained from 1976 and 1977 class reunion booklets. A certified letter was not included in this sequence of letters because we did not wish to risk antagonizing the respondents.
4. Telephone tracking: If the respondent could not be located by either the letter sequence addressed to the parents or that addressed to the respondent, then telephone tracking procedures were designed to be initiated sequentially as follows:
   a. Consult 1966 city directories or telephone books (if available) to ascertain the names of parents or former neighbors.

b. Consult current telephone and city directories to locate parents or respondents.

c. Contact class reunion committee members for help in locating missing classmates.

d. Find current addresses for former neighbors (identified from 1966 city directories) or friends (from lists provided by one-fourth of the respondents in 1966) for additional information on missing respondents.

e. Contact the former high school requesting additional information on the missing respondents.

f. Search current and past telephone and city directories to identify individuals with the same last name as the respondent.

g. Contact former employers of parents (employer information obtained from 1966 directories)

h. Search current telephone directories of major metropolitan areas in the state of Washington and Oregon for the parent or respondent. A search of surrounding communities was made for respondents residing in small Washington communities in 1966.

i. Search (by telephone or by letter request) public records or other official files.

j. Publish name in local newspapers requesting community help in locating the hard to find.

These procedures were not new (Clarridge et al., 1978; Carrel et al., 1975), but represented a multi-method approach and an upgrading of the quality of letters mailed so that all "bulk" mail appearances were

eliminated. All letters, return cards, and envelopes were designed to be printed using ink-jet document printers that provided complete personalization of all correspondence. The personalization included respondents' name, address, sex (as indicated by pronouns), year in school, and previous participation in the 1966 interview sample where appropriate. All envelopes were similarly personalized. All letters were signed manually using a blue ball-point pen. Social Research Center stationery was used for all outgoing mail and all return mail was returned to the Social Research Center at Washington State University for forwarding to the investigators. Commemorative stamps, which are reported to favorably affect the recipient's likelihood of opening and reading the correspondence (Hensley, 1974), were used on all outgoing letters. A stamped, self-addressed return envelope was included in the first mailing to parents. Where the mail to parents was returned as undeliverable (we expected about 50 percent undeliverable) the unused return envelopes were retrieved and reused in the first mail-out to the reunion addresses of the respondents. All other mail-outs included a business reply envelope.

To accomplish execution of the tracking design within a six month period for each respondent required an efficient flow of information to move the names of missing individuals from one procedure to the next with minimum delay. The strategy for accomplishing this task involved computerization of the tracking records so that the investigators would know the exact status of each individual in the tracking process. This was accomplished by having all mail returned to the collaborating university where a research assistant opened each return envelope and undeliverable envelope. A prepunched computer card was pulled for each return envelope. A series of codes were developed to describe in detail the exact content of the

returned envelope. For example, a letter returned with the current address and telephone number for the respondent was coded a "1." A return that contained the address only was coded a "2." Codes were also established for refusals and undeliverable letters. Based on the type of reply received, the prepunched ID card was coded and dated with the date of receipt. For efficiency, the types of replies were sorted by hand into groups and then keypunched by group. The punched cards were then mailed to the outstate Career Development Study headquarters. Upon receipt, the cards were read into the computer and changes were made in the completion status on our master name file for the particular respondents affected. Using the updated master-respondent status file, computer programs were written to provide information on each respondent in the study, current summaries of the tracking results to date, various coded lists of unlocated respondents, and as the basis for generating mailing lists for future personalized letters.

During the Summer of 1977 a pilot test of the proposed procedures was conducted to establish the feasibility of effectively implementing the design procedures. A stratified random sample (N = 100) of the 1966 respondents was selected for preliminary follow-up. Letters were generated on word processing equipment and 75 percent of the individuals were located by mail. We considered this percentage to be high given the stratified nature of the sample which favored smaller communities. After completing the mail procedures we attempted to contact the remaining individuals by telephone. The combined mail and telephone efforts proved successful in relocating 100 percent of the people in the pilot study. We established direct contact with 98 percent of the study sample. One individual was institutionalized and was not communicative. The second had taken non-

established residence in New Zealand. The pilot study satisfactorily demonstrated the potential effectiveness of our tracking procedures, suggested minor adjustments to the design, and supported the feasibility of proceeding with the full-scale 13-year follow-up.

Tracking Judy Smith

An outcome of the pilot study was a realization that a careful record needed to be kept of each attempt to locate an individual. Two qualities appear to be needed to successfully accomplish tracking and record keeping: patience and persistence.

We can best illustrate what we learned from the pilot study by recounting our experience in tracking one individual. The following is taken from the written records for one individual. Names, addresses, and dates have been changed to protect the identity of the individual.

Known 1966 information: Judy Smith, 111 West Little Street, Everett Washington.

CASELOG:

When the wave-one letter was returned "addressee unknown," all useful 1966 demographic information was obtained: parents separated, living with non-relatives, mother's name given only as Mrs. Smith, good grades, age 18, 11th grade, white, college major preference given as English and Literature, father's occupation listed as electrician, and she listed herself as the youngest of three siblings.

A search of the Everett telephone directory revealed no good leads to Judy or Mrs. Smith; neither did a search of the phone-fiche for the six largest cities in the state of Washington.

The class reunion list noted her as Judy I. Smith, but they did not have a current address. No one at the reunion held two weeks earlier could supply an address for her on the missing persons' list circulated there.

Checking the Everett Chamber of Commerce city directory service for 111 West Little Street, we found the 1965 address was listed as Virginia Williams' Girls Home. This was a foster care facility which had been closed for about six to seven years. It was evident that Mrs. Williams may have moved from the community.

Everett High School was called to try and obtain more information. After explaining the study to her, a secretary informed

us that Judy Smith was in chorus, attended Everett High School for two years, then she withdrew and attended Madison High School in Seattle. She did, however, graduate from Everett High School according to school records. She had been referred to foster care in Everett from Little Creek Correctional Facility in Kennewick, Washington, where she had been in 1965-66. In 1967, she had requested a transcript to be sent to a community college in Seattle.

The Friendly Youth Home in Everett was called for information regarding Virginia Williams. As far as they could recall, Mrs. Williams closed her home over 10 years ago and they did not know where she was. They supplied two possible sources of information: Mrs. Anderson in the Juvenile Court (999-9999) or Mrs. Kathy Reese, a local woman who worked with girls. These did not seem like particularly fruitful leads, so they were not pursued further.

The community college in Seattle was called. We were told that Judy Smith left with a 2-year general degree in arts and sciences. They had two addresses for her. The first address they had was 202 West 5th (Seattle). The second address from the Summer of '71 was: 3636 Lovely Avenue North (Seattle), phone: (999-9998). They noted that she may have transferred to the University of Washington.

The Seattle Public Library city directory service was called and the following information was obtained: The 71-72 listing showed a Mrs. Judy Smith at that address in apartment #8 (occupation: student). The library staff person was asked for a possible male listing for an individual who was an electrician. The name of Robert Smith was located but current telephone directory listings did not show a Robert Smith. The 71-72 city directory listed his place of work as Hardhat Shipyards. Hardhat Shipyards was called and we spoke directly to Robert Smith. He was not related and was not able to provide any information.

Checking the phonefiche revealed two J. Smith's: One was a disconnected number and the other was a reassigned number. Directory assistance provided two new J. Smith's; one was Jean, a student, and the other was J.F. (no answer).

Following the lead that Judy had been at Little Creek Correctional Facility, south of Richland, Washington, a check was made through the Richland Chamber of Commerce city directory service. Using present and past listings in both city directories and telephone directories, no useful names were provided.

The University of Washington records department was called. They could find nothing for Judy Smith. The University of Washington student directory service was called and they showed a Judy Smith on Lovely Avenue in the student directories from Autumn of '72 through Summer of '73.

Voter registration records were checked for King County (Seattle). There was two possible listings: one was 38-years old, the other was listed as J.F., age 29 (possibly the same J.F. for whom we had a current telephone listing but had been unable to reach for days).

At this point it was imperative to determine a middle name or initial for Judy Smith. The Everett High School was called back and the middle name was provided: Irene. The community college was called and they provided a birthdate: May 5, 1948.

We obtained the name of the state office for foster records. Contacting the Department of Social and Health Services resulted in a referral to the regional office in Spokane. The regional office said that the city office where Judy last was under foster care would have her records. The Everett, Regional II office of foster care was called and we spoke with Jim Steele. He did some checking and when recalled gave two items of information: 1) that records such as this (to determine where she was from) were inaccesible to us and that we would need a court order or would have to have a caseworker conduct a search for them; and 2) that a lady in the office there used to be the sister-in-law to Virginia Williams. This lady had called the Williams' parents who provided Virginia's new address in Portland, Oregon (503-999-9997).

Rechecking with the Seattle Library directory service for subsequent listings at the Lovely Avenue address, we discovered that in 1973 the address was listed for a Mrs. Terry. In 1974-75, it was listed for a Mable Smith. The librarian said that the apartments were known as the Greenwood Apartments and that there was a manager/owner listing.

Directory assistance could provide no current listing for Mable Smith.

The owner/manager of Greenwood Apartments was called. It was an older woman who said they had sold the building several years ago. The lady said her husband was ill and would not remember anything about the family. She did, in fact, remember the Smiths. She did not know if the mother worked but Judy did. When asked where, she said in a nursing home as an aid, a few blocks away. However, she could not remember the name of the home. Likewise, she did not know anyone presently living in the apartments who may remember the Smiths as there was a high turnover in tenants. If they had moved out of town, she did not know where. She never recalls seeing a Mr. Smith at all.

Virginia Williams (in Oregon) was called. She had just moved in and did not have her previous records. Judy Smith, she said, was a quiet, depressed girl. She was bad with peer group relationships, she had problems at home with her mother, she was a devout Catholic, and she sang in the choir at St. Leo's. Virginia said that she had lost touch with Judy during the past three years. She asked that we call her back in two weeks because she

hoped to have more of her records there by then. Hopefully, she would be able to fill in some details at that time.

Rechecking with Seattle Library directory service for the current city directory listing at 3636 Lovely Avenue North, we found that there was a listing for a Judy Scanzoni in apartment #8. However, there was no phone or occupation listed. The librarian gave us all the names and apartment listings for Greenwood Apartments (10 units). Of the 10 units, seven had phone numbers. Each one was called: one was a reassigned number, one lady hung up twice, two numbers had been disconnected, and three numbers were no answers after repeated phone calls.

Following up the Catholic church lead, we obtained the general number for parish information. We were given the names and numbers of three parishes someone living at the Lovely Avenue address might attend. St. Catherine's did not know of her, St. Paul's did not know of her, and St. Frederick took the name and would check (call back in 15 minutes). We called back and spoke to the secretary. She had searched the church records for a Judy Smith who may have been married or baptized in that church. The secretary found a record of a Mable Smith from 1964 whose address at that time was 202 West 5th (the same address the community college had for Judy in the late 60's). Mrs. Mable Smith, nee: Mable Louise Bradley, February 1, 1905 in Des Moines, Iowa. She was a convert to the Church and was baptized in 1964 at age 59. Her sponsors were Mr. & Mrs. Paul Taubman.

Following up on the nursing home lead provided by the woman who had owned the apartment building, we looked in the phonefiche yellow pages and had a listing for a home at 6th and Hope. It was called the Oakhills Home. There were three pages of listings and we were unfamiliar with cross-streets in Seattle, therefore, it was just chance that we found this listing. We called the Oakhills Home and they said they had not had an employee by the name of Judy Smith. We asked them if there was another home in the area. We were told that there was another home called Hartford on 15th Street. We checked with directory assistance and no listing could be found for Hartford Nursing Home. We looked again at the phonefiche yellow pages and located a Hartford-Novak Home in that area. We called the home and asked if they had an employee by the name of Judy Smith. The woman in the office said no. We asked if they had an employee by the name of Judy Scanzoni. Yes, she remembered Judy Scanzoni from years back. She thought it was about six or seven years ago. We asked for more information and the woman volunteered to see if the employee file was still in the current drawer. It was there and the woman was very willing to give the information. It was just a few years ago that Judy had worked there. She'd thought that Scanzoni was a maiden name, but upon reading the file, discovered that it was a married name. Judy's husband's name was Jim Scanzoni. The address listed was 3636 Lovely Avenue North. The record indicated that Judy was age 22 in 1971 and that she left in 1973 because of a nervous problem. Her record indicated an unwillingness to

cooperate, slow, unable to take the good along with the bad instructions. She had worked full-time there. We asked for the Social Security number and it was provided (888-88-8888).

Directory assistance could provide no listing for Jim Scanzoni.

To see if a letter could be forwarded if addressed to Judy Smith Scanzoni, we mailed a letter to the Lovely Address using this name. It was returned as undeliverable.

We sent a letter to the Department of Motor Vehicles with an enclosed letter to Judy. Their procedure was to use the information we supplied (Social Security number, full name, birthdate) and to search their records for issuance of a driver's license. If an address was found, they would forward our letter. If an address is not found, they would inform us. After a brief two-week wait, word was received that they could not find such a person. It appeared reasonable to assume that Judy did not have a driver's license.

On September 27, we phoned another of the neighbor numbers from the 1976 city directory for the Lovely Avenue apartment building. We reached a Susan Freeman who had lived in apartment #7. She had since moved from Lovely Avenue but had retained her same phone number. Susan remembered Judy and her mother. She also said Judy had a baby. She recalled that she was probably separated and/or divorced and that there was no husband around. Judy had lived in Hawaii for a while and she surmised that perhaps Judy's husband was in the service. She remembered that Judy and her mother did not work and that they had moved out about two years ago this December. We asked if there was anyone else in the building who might have known them better or know where they had moved. Susan was sure they had moved to the Capital Hill area of Seattle (closer to the downtown area) but she could not be more specific. She said Mrs. Bales who lived in the apartment below Judy might know. We told her that this was the older lady who had hung up on us twice and suggested that perhaps Susan could call Mrs. Bales and find out if she knew anything. We agreed to call back the next evening.

On September 28, we telephoned Susan. Susan reported that Mrs. Bales knew that Judy had moved to the Capital Hill area and that was all. We asked about the age of the baby. Susan said the baby would be two in December. She thought the birthdate was around Christmas. She also recalled that the husband was probably in the Navy. Susan did remember a maintenance man who had lived in the building, Fred Baker, but reported that he just moved within the last two weeks to Los Angeles and was living with friends. She knew of no way to contact him.

Based on the written history in tracking this case, we concluded that Judy and her mother must be receiving some type of public assistance. They had no phone, they had no car (Susan

remembered that they took the bus), and they did not have jobs that we knew of.

We called the local social service office. A staff member searched their office files and then entered the information we provided her on the terminal. We supplied the name, Judy Smith Scanzoni, and the Social Security number. The lady had asked for a birthdate, but we offered the Social Security number instead. Judy Scanzoni was on the active file with another social service office. That meant that she was in an in- or outpatient facility. We called the other office and was transferred to the financial section. The clerk was very helpful but was unable to find a "card" in their active file and a computer search was made. In the middle of the search, the computer went down (i.e., crashed, stopped operating). We asked if there was another office with a master file and why the other office showed her in the active file of this office if they did not have her records? The clerk did some more checking. The Social Security number pulled the file up on the terminal and they located her records (apparently there was no "card"). Judy was living at the Hilltop Care Center, a congregate care facility. She had been there about one year. We were given the name and the phone number of the caseworker, Tom Swift (999-9996). In phoning Mr. Smith, he remembered the case, although he said he had not seen Judy for some time. He thought she might be able to fill out our questionnaire, but asked that we contact the director of the Hilltop Care Center for confirmation. The director, Mrs. Morrison, said Judy was subject to delusions, that she was under a period of great stress at this time, and she requested that we not send anything to her. She was afraid that Judy probably couldn't handle it. We asked how long they expected Judy to be living at Hilltop Care Center, and Mrs. Morrison guessed that she would be there at least one more year. If Judy was released, they would have a forwarding address for her and would either give us that address or forward a letter.

Judy Smith was the last individual we located of the 100 people in the pilot study. While we did not establish direct contact with her, we knew exactly where she was. We cite her case to illustrate the importance of patience and persistence. Tracking this case also taught us the need for accurate records of the tracking attempts. Without the written record, we could not have put all the pieces of the puzzle together to come up with new ideas as to where to look next for Judy Smith. In summary, the pilot study satisfactorily demonstrated the effectiveness of our tracking procedures, suggested minor adjustments, and supported the feasibility of

proceeding with the full-scale thirteen-year follow-up. Based on the favorable results from the pilot study, we decided to proceed with the large-scale follow-up of the remaining 6,698 individuals.

The Career Development Study Tracking Experience

Before relating the experiences we had locating current addresses for the Career Development Study respondents, we should make explicit the basic premises guiding the endeavor. Successful tracking performance is based on six principles:

Planning
Personalization
Personnel
Patience
Persistence
Perfection

Attention to the six "P's" of tracking performance will, in most cases, result in reduced attrition in panel research designs.

Planning

Without an explicit, detailed tracking methodology established in advance, a tracking enterprise will either fail or be a tremendous burden of confusion and frustration. The plan must take into account all reasonable contingencies that the researcher can anticipate. The major contingency is the failure of a procedure to generate the desired result. By relying on multiple procedures, a researcher can reduce the impact of the failure of one technique.

Consider the experiences of the Project Talent follow-up. Mail procedures for the 11th year follow-up were less than successful in tracking and obtaining information from their 375,122 original respondents. The 11-year follow-up location rates range from 20 percent to 28 percent. The method failed. However, when a different methodology was used on a smaller subsample (about 11,666 in total) from 75 percent to 93 percent of this group were located and interviewed. The Project Talent example illustrates how

reliance on one methodology may result in project failure unless the "game plan" includes a backup technique that is planned and ready for immediate implementation. This is not to say that a single methodology will not work. The Wisconsin Study, for example, was very successful relying heavily on telephone procedures. In large-scale panel studies, however, it is too expensive an endeavor to hope that a single method will work.

The plan for the Career Development Study included several different tracking techniques of which mail-back and telephone techniques were primary. In addition, we used class reunion booklets which, because they were relatively recent, were functionally comparable to an intensive community search by knowledgeable community individuals. Moreover, the extensive use of the telephone often substituted for a community visit without the added costs of a face-to-face interview. While the reunion booklets and telephone use may be surrogate techniques to obtain the benefits of a community visit, the tracking procedures relied most heavily on mail procedures.

One might question the choice of mail techniques over telephone procedures given the rather dismal performance of Project Talent (mail techniques) versus the tremendous success of the Wisconsin Study (telephone techniques). The reasons for failure in the former and success in the latter are noteworthy and informed our decisions. First, the scope of the studies are such that one cannot strictly compare Project Talent with the Wisconsin Study to determine the feasibility of various procedures. Project Talent sought to track some 376,000 individuals in a national search whereas the Wisconsin Study followed a state sample of some 10,000. Second, unlike Project Talent, we did have name and address lists that were reasonably accurate and we had access to state-of-the-art mass mailing

equipment. Third, Sewell and associates had access to telephones at reduced rates while we did not. In addition, we felt we could get the U.S. Post Office to do a large portion of the work for us using the mail whereas using the telephone would involve doing the work ourselves. Finally, there was the inevitable cost comparisons. To mail out a single letter would initially cost us about 45¢ each (19¢ for letter preparation and stuffing; 26¢ for mail-out and return postage at 13¢ per ounce rate). This figure does not include personnel costs. To place a single one minute phone call to the state of Washington would cost us about 33¢ a minute at evening rates. We figured that an average call would range between a three-minute minimum and a five-minute maximum. Thus, a call would result in an 81¢ to a $1.29 charge in direct costs without considering personnel time. Budget considerations, then, suggested the mail technique as the first-line approach.

The procedures were sequenced to follow a tight schedule. The original schedule is illustrated in Table 5.

Table 5. Tracking techniques, timetable, and expected response rates for the relocation techniques planned in the Career Development Study.

Date	Event	Expected Total Response Rate
January 10, 1978	Parent wave 1 letter mailed	0%
January 19, 1978	Parent wave 2 letter mailed	3
February 8, 1978	Parent wave 3 letter mailed	57
February 21, 1978	Respondent reunion wave 1 letter mailed	58
March 1, 1978	Telephone search process begins	61
March 2, 1978	Respondent wave 2 letter mailed	61
March 10, 1978	Parent wave 4 letter mailed (certified)	76
March 22, 1978	Respondent reunion wave 3 letter mailed	84
April 21, 1978	Respondent reunion wave 4 letter mailed (certified)	97
June 1, 1978	Telephone search ends--tracking complete	100

Implicit in the timetable is an assumption of technique failure to obtain the desired current address. Reduction in the total amount of time spent in the field was accomplished by overlapping the different tracking sequences. In light of Temme's (1975) tracking experiences, we expected

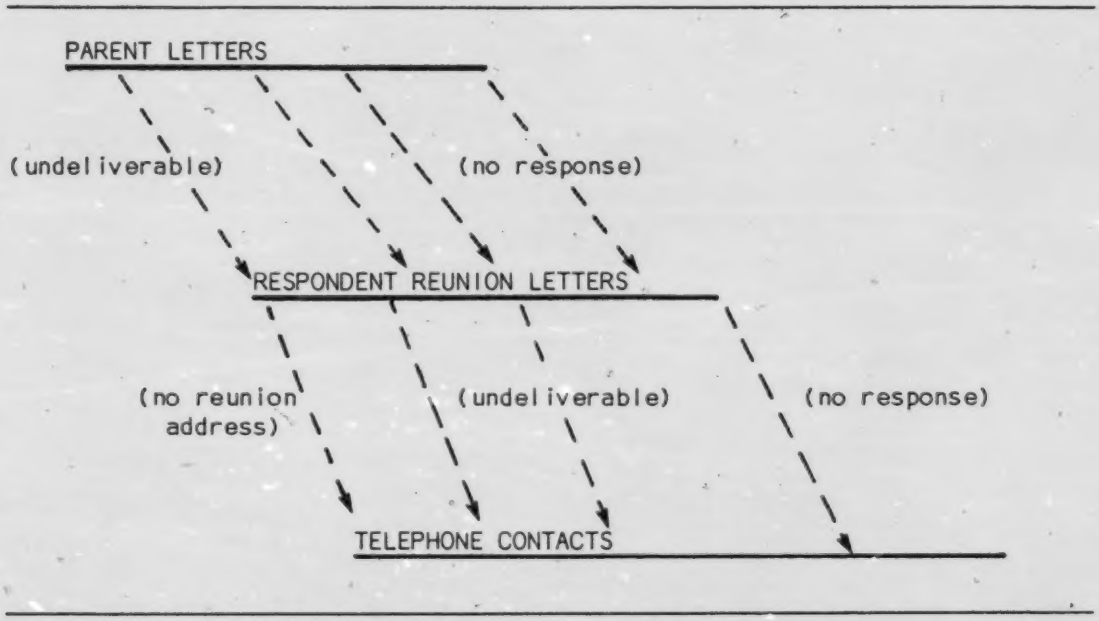

Figure 1. Illustration of sequential flow of tracking techniques

that about 50 percent of the letters to parents would be delivered. Rather than wait for the entire sequence to be completed, procedures were established to immediately check the reunion address list if the letter sent to the 1966 address was returned as undeliverable. The reunion addresses were obtained by inquiring of the local school for the name of the class reunion chairman for the classes of 1966 and 1967. Calls were placed to the reunion chairman and arrangements were made to obtain either a copy of the class reunion booklet or the working notes of the reunion committee. The

reunion information varied from very complete coverage of classes to very poor coverage. It became very evident that the quality of the reunion lists varied directly with the size of the school, and the size and level of organization of the reunion committee. Some 10-year class reunion arrangements were very informal. Decisions to have a reunion were made in a bar after a few drinks among old high school buddies. This kind of planning usually resulted in an informal, word-of-mouth attempt to reestablish contact with former classmates. Usually these "committees" were not successful in contacting individuals who were outside of their social networks. We discovered that in these situations about a third of the original class was recontacted about the reunion and that the informal committee structure usually occurred in the largest schools.

Other more structured committees had a distinct division of labor and a large number of committed individuals to help reestablish contact with their former classmates. In the more structured committees it was more prevalent to find that the expressed goal was to contact all of the former classmates. Intensive procedures were utilized to try and establish contact with everyone. Usually, these committees were successful in reestablishing contact with over three-quarters of their original classmates. The more structured committees were generally found in the moderate-sized high schools.

In rural communities, class reunions were generally very informal and held on a date of special significance to the local community. They appeared to be less of a class reunion and more of a community gathering. Seldom did we obtain a reunion booklet or publication from these smaller school reunion "committees." Everyone generally knew where their former classmates were.

In total, we received reunion addresses for 3,527 (52 percent) of the 6,798 individuals in our study. We found the name but not the current address for about 43 percent of the 6,798 study members. About 5 percent of the individuals in our study were not listed in a reunion booklet. If a letter to a 1966 address was returned as undeliverable, we immediately checked the reunion name file for a more current address. While the respondent may have moved from the reunion address, the listed address was generally less than one-year-old. If an address correction card was filed with the U.S. Post Office, use of "address correction requested" procedures typically provided a more current address. If the letter sent to the reunion address was returned undeliverable or not forwardable by the Post Office, the name was immediately sent to the telephone tracking process.

In addition to the planned sequence of the mail-to-telephone techniques, the telephone tracking procedure was sequenced to provide a guideline to personnel. Providing the sequence established the priority governing the approaches that were tried. Fondlier (1976), for instance, found that locating parents, relatives, and personal acquaintances resulted in a very high success rate whereas contacting schools, neighbors, the Post Office, etc., was usually less successful. Having the telephone trackers first try the more successful approaches reduced costs and minimized confusion concerning what approaches had already been tried. The sequence of telephone approaches used in this study was outlined on pages 35-37.

Past experiences in both Project Talent and the Wisconsin Study appear to suggest that maximum tracking efficiency with the hard-to-locate cases may be achieved best by using a well-equipped centralized facility. The telephone tracking personnel in this study were provided with access to:

1. A thirteen phone telephone survey room

2. All current telephone books for the state of Washington

3. Current telephone books for the major cities in Oregon

4. Microfiche copies of telephone books of the 246 major metropolitan areas (Bell and Howell, "phonefiche")

5. Current city directories (Polk) for selected major cities in Washington

6. 1966, 1967 city directories for cities in which the sample schools are located

7. Maps of various communities in Washington

8. A zip code directory and a telephone area code book

9. Software and access to a terminal

   a. Current addresses of located respondents, and

   b. Names of 1966 friends listed by one-fourth of the 1966 respondents

These materials and facilities provided an adequate search facility for conducting the nationwide search for our study participants. The telephone books, microfiche, and directories were conveniently placed in a room adjacent to the telephone survey room which minimized confusion in the telephone area and reduced interviewer fatigue by providing a break in telephoning routines.

Personalization

Dillman (1978) notes that the impact of personalization on a study must be viewed relative to the facilities available, the request being made, and the type of person being contacted. Mass mailing technology has progressed significantly in recent years. The "Dear Occupant" or "Dear Participant" on computer-printed labels can no longer be considered a serious effort at tracking respondents. Dillman and Frey (1974) and Carpenter (1974) report

that personalization is the key factor in obtaining high response rates. To optimize mail-out techniques, facilities are needed for generating multiple waves of personalized mail. This requires at least one of the following: a secretarial pool; a letter-quality printer linked to a computer; computer-supported word processing equipment; or ink-jet document printers or comparable equipment. We had access to six IBM ink-jet printers that permitted the mass generation of business-quality letters. Copies appear in the Appendix. With a short-time interval between mailings (7 to 14 days), materials may be generated as needed or may be mass produced in advance and then sorted. Inasmuch as the ink-jet printers were available to us in large blocks of time rather than small amounts of time on demand, we mass-produced all four letters to parents, then presorted for responses returned. The respondent reunion letters were mass-produced for all individuals for whom we did not have a current address by the 10th of February. Whenever smaller mailings were done (less than 500) we utilized word processing equipment. Therefore, at all points in the study we tailored all correspondence to the particular individuals we were searching for and writing to.

Personnel

Tracking reports routinely note the importance of well-trained personnel. Several personality traits are found to be especially useful:

1. Interpersonal skills
2. Reliability
3. Inquisitiveness and creativity
4. Persistence coupled with patience
5. Attention to detail in finding "leads" and logging details of the search.

In addition, several acquired capabilities are very important:

1. General knowledge of the study
2. Experience in all aspects of the tracking enterprise
3. Commitment to the success of the study.

Once tracking began with telephone trackers, it proved to be useful for several trackers to jointly review hard-to-find cases and to exchange information on how to approach the case. Assigning "unlocatable" cases to new personnel often resulted in fresh insights and the development of a new approach that eventually led to the hard-to-find respondent. Tracking the hard-to-locate was frequently more of an art than a science requiring some combination of interpersonal skill, persistence, intuition, resourcefulness, and luck. The desired personal qualities for effective tracking are best expressed by Barnes (1972): "...we like our interviewers to have St. Bernard instincts as well as bulldog tenacity."

An occupational hazard in the relocation enterprise was tracking fatigue. Clarridge, et al., (1978) found it necessary to limit telephone tracking to two-hour periods in an effort to maintain tracker efficiency. We found that trackers could work effectively for three- and even four-hours at one time provided that their activities were varied. There was an opportunity to physically move from their phoning stations to accomplish tasks such as directory searches, and the trackers were not required to work every day.

Persistence, Patience, and Perfection

The last three "P's" in tracking performance represent the total image of the project. Carefully following plans, creating letters without errors, dealing patiently with people who become rude on the telephone,

being patient and understanding with parents who have suffered greatly because of their children, and being persistent in following even small reasonable leads, represent small steps when taken separately but large leaps when taken together. To be successful, reasonable care must be given to each significant detail. Patience, persistence, and perfection represent characteristics that all individuals on the project must share in order for the follow-up enterprise to be successful.

Response to the Multimethod Tracking Procedures

In January, 1978, the mail sequence was initiated for the total sample (N = 6798). Table 6 outlines the dates and the number of letters sent out for each mailing wave to parents and respondents. All return mail was

TABLE 6. RECORD OF MAILING DATES, TYPES OF LETTER, AND NUMBER OF LETTERS POSTED

Date	Letter Type	Number Posted
January 10, 1978	Parental Wave 1[a]	6726
January 18, 1978	Parental Wave 2[b]	6726
February 8, 1978	Parental Wave 3	1813
February 22, 1978	Reunion Wave 5[c]	2242
March 3, 1978	Reunion Wave 6[d]	2242
March 10, 1978	Parental Wave 4[e]	442
March 22, 1978	Reunion Wave 7	552
March 27, 1978	Reunion WAve 5[f]	162
	Total letters sent =	20,905

[a]Personalized letter sent to parents

[b]Reminder letter sent to all parents

[c]Personalized letter sent to 1976/1977 addresses to respondents using high school reunion booklets

[d]Reminder letter sent to all Wave 5 recipients

[e]A certified letter sent to parents

[f]A special mailing to respondents from two high school areas for which we had difficulty obtaining reunion booklets

addressed to the Social Research Center at Washington State University, which collaborated in the follow-up study. Approximately 45 percent of the Wave I letters were returned marked "undeliverable" by the postal service. Upon their return, one part-time research assistant pulled a small set of pre-punched computer cards from a master file. Each card had the respondents' ID number and name for each letter returned by the parent, respondent, or postal service. The research assistant separated the cards by the appropriate completion code, and forwarded the appropriate computer cards to the outstate research office. This procedure enabled us to maintain current records with daily updates of returns (with a two-day lag due to mailing time). Later, the returned address cards were also forwarded. It is interesting to note that in a few cases the post office was able to forward Wave II letters to the family or the respondent when the Wave I letter was marked "undeliverable" and returned.

By February 24, 1978, responses were received from 3,086 parents from a total of 3,635 letters that were delivered. This constituted an 85 percent response by parents prior to our mailing letters to the respondents at reunion addresses and mailing the Wave IV certified letter to nonresponding parents. By the time the telephone procedures were initiated, 4,249 parents or respondents had returned a current address (63 percent of all former respondents). Mail responses continued to arrive after the telephone procedures were initiated such that about 70 percent of the respondents or their families eventually returned an updated address. Figure X illustrates the percent of respondents located by date.

On April 1, 1978, the telephone follow-up procedures were initiated. Four days were spent training nine part-time employees in the art of telephone tracking. The telephone procedures would eventually increase our

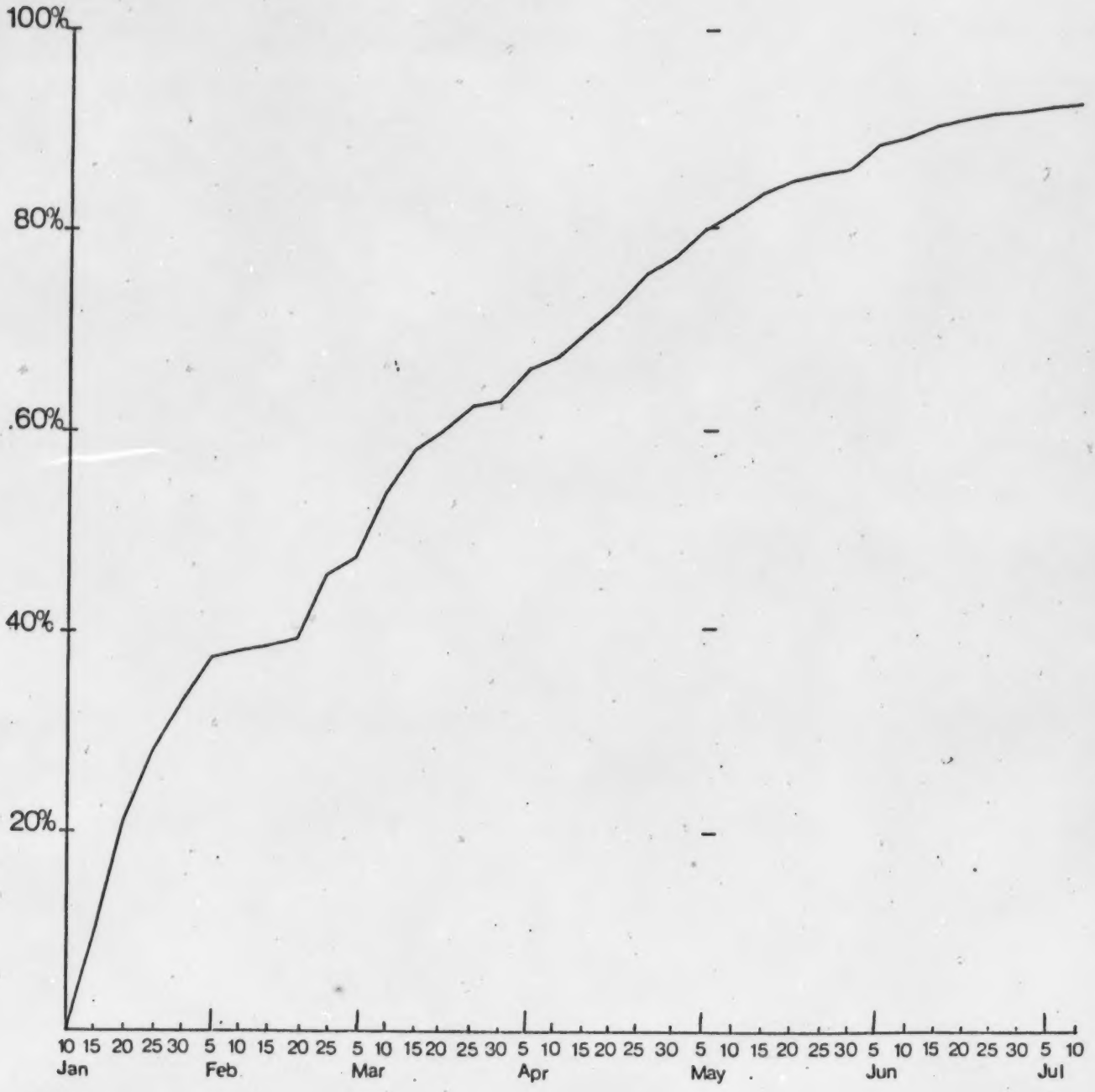

Figure 2: Percentage of original respondents for whom current addresses have been obtained by date.

successful relocations by an additional 25 percent. By July 20, 95 percent of the original respondents had been relocated and the number of part-time employees was substantially reduced. The projected date for obtaining 90 percent of all original respondents was achieved. The final tracking success rate was 98.6 percent.

Several caveats need to be observed. As noted above, one small school did not return the name and address cards that were a part of the original study. Another small school (N = 156) that served Ft. Lewis Army personnel had been consolidated with surrounding schools. We made a personal visitation to each site enlisting the cooperation of the current principal and guidance counselor in the first case, and that of the district superintendent of schools in the second case. Through the diligent tracking efforts of one staff member, 91 percent of the respondents in the former school were relocated as were 75 percent of the latter. All of the other 27 schools in the sample have relocation rates of 98 percent or higher.

Our experience indicates that the multiple wave mailings did encourage parents to respond. Interestingly, parents demonstrated a tendency to return the Wave I reply card even after they had received subsequent mailings. Similarly, certified letters (return receipt requested) enabled the identification of numerous letters delivered to the wrong family or individual. Until they were asked to sign for a letter, current residents at the 1966 addresses of our respondents would often discard letters rather than notify the postal service that the family we were seeking no longer lived at the address. In a few cases in rural areas, the local postal service held our letters thinking that a new family would arrive. The certified letter exposed those tracking failures as well.

In summary, from previous research we have abstracted and implemented multiple methods for tracking panel respondents by which we achieved highly successful relocation rates. In the following section we demonstrate that the methods are also cost effective.

Costs for Implementing the Multimethod Design

The expenditures we incurred in relocating 96 percent of the participants in The Career Development Study are summarized in Table 7 (another 2 percent were located during interviewing). For ease in following the presentation the expenditures are presented in terms of major categories associated with the tracking effort rather than in formal cost accounting categories. The expenditures are allocated between the major methods used, namely mail and telephone procedures. They are averaged across respondents located. Finally, they are totalled and adjusted to include an institutional indirect cost rate of 35 percent of total costs.

TABLE 7. Summary of Tracking Expenditures

	Mail Related	Telephone Related	Total
POSTAGE (stamps, international reply coupons, return postage charges)	$ 4878.97	$ 0	$ 4878.97
MATERIALS (office supplies, stationery, envelopes, printed record forms)	3011.30	365.81	3377.11
LETTER PREPARATION (printing of 2 sets of 4 wave personalized correspondence)	5558.26	0	5558.26
TELEPHONE LAB CHARGES (charges for 12 telephone hook-ups and monthly charges)	0	1260.00	1260.00
TELEPHONE CHARGES (primarily direct dial evening and Saturday rates)	0	5624.48	5624.48
STAFF SALARIES AND BENEFITS (fractional time for project director, secretary and research assistant)	9999.12	6573.36	16572.48
PERSONNEL (part-time for clerical tasks, class reunion committee assistance)	2447.77	0	2447.77
TELEPHONE TRACKERS (part-time)	0	7133.00	7133.00
SEARCH MATERIALS (phone fiche, telephone and city directories)	0	3109.96	3109.96
COMPUTING CHARGES (programmer for software development, billings)	2600.00	1655.00	4255.00
WASHINGTON STATE UNIVERSITY, SOCIAL RESEARCH CENTER CHARGES (computing, indirect cost, miscellaneous)	430.48	0	430.48
TRAVEL AND PER DIEM (field visit to two schools)	0	715.56	715.56
TOTALS	28,925.90	26,437.17	55,363.07

Table 7. continued:

Per Case Costs:

Total N = 6805
Located to date:

Mail Procedures	N = 4702	
Telephone Procedures	N = 1828	
Total	N = 6530	(96%)

Per Case Costs:

Average Cost per Location:

Mail	$ 6.15
Telephone	14.46
Total	$ 8.48

Adjusted Per Case Costs
(Institutional Indirect Cost Rate of 35% of Total Costs)

Mail Procedure	$28,925.90	$39,049.97
Telephone Procedure	26,437.17	35,690.18
Total	$55,363.07	$74,740.14

Average Adjusted Cost per Location:

Mail	$ 8.30
Telephone	19.52
Total	$11.45

We emphasize the following points regarding these figures. First, wherever possible the figures correspond to actual expenditures for which receipts and time and effort statements exist. They are not blue-sky estimates. Second, by intention the figures represent an upper statement of costs. They are liberal estimates in several respects: a) where supplies were ordered, the total costs are reported, including unused materials earmarked for data collection procedures; b) where in-house charge-back procedures do not exist--e.g., computing costs, software development, acquisition of library materials including tracking resources --we have calculated the costs on the basis of standard rates charged elsewhere; and c) we have adjusted the costs to include an indirect cost rate which does not in fact apply to our own situation. In summary, where we have had the advantages of services and resources that are not charged, we have included estimates of what those costs might be under full cost accounting circumstances.

Figuring the upper limit of expenditures, our records indicate an average per case relocation cost of $11.45 per respondent. We caution against direct comparisons with earlier studies that may have had the advantage of lower wage scales, postage, telephone and service rates. We further caution against generalizing these costs to other research settings that may have their own unique configuration of resources that may be used to advantage, and to other samples whose unique features must be taken into account in developing an effective and efficient tracking design. Nonetheless, we submit that even at the current cost of living successful relocation of respondents in long-term and large-scale panel studies can be justified as cost effective.

Summary and Conclusions

This paper addresses three issues associated with the uncertainty regarding the value of long-term and large-scale panel studies: a lack of established tracking procedures, the problem of sample attrition, and the question of the economic feasibility of relocating study participants. We have presented a summary statement of the state-of-the-art in tracking methods and have presented a detailed outline of the procedures, response rates, and costs incurred in a recent project of our own design and execution.

A review of the tracking procedures employed in previous studies reveals considerable variation in the kinds of samples followed, the tracking methods employed, and the results obtained as measured by relocation rates and associated costs. The representative studies we reviewed included samples consisting of a city household follow-up, schools in a large metropolitan environment, state follow-up efforts, and examples of national follow-up efforts. The methods used consisted of telephone tracking procedures, mail-out procedures, field contacts or visits, and record searches--or some combination of the four. In reviewing the previously completed studies, we observed that the success of the relocation efforts appeared to be closely associated with the availability of the person-specific information on the original respondents, thorough preparation and careful execution of the tracking design, the use of multiple tracking procedures, and persistence.

From the literature we abstracted a number of considerations and decision points that might inform consideration of the feasibility of attempting to relocate participants in other studies. The decisions relate to

three areas: the extent and accuracy of the available data documentation, the characteristics of the Wave I respondents and their families, and the resources available to the researcher.

We outlined our experience with the thirteen year follow-up of former high school students in The Career Development Study as a way of illustrating the application of the principles we abstracted from earlier efforts. We employed multiple search and tracking strategies in a design based on a combination of mail-out and telephone contact procedures. We overcame the difficulties associated with being physically removed from our sample concentration by establishing a working relationship with a local state university. We used automated technologies wherever possible including the personalization of mass mailings, maintaining respondent status records, and accomplishing directory searches. We committed professional staff and employed part-time personnel to accomplish the various tasks, notably that of conducting the telephone search. We maintained detailed records of time, effort and expenditures. Over a 9 month period we produced a 98.6 percent relocation rate at an average cost of $11.45 per case.

There are several issues we have not addressed: the issue of a potential methods bias in tracking procedures, issues relating to the effect of tracking strategies on survey response rates, the challenge of tailoring follow-up designs to meet specific objectives or to deal with special samples. These and other important issues require further consideration.

In summary, from previous research we have abstracted and implemented multiple methods for tracking panel respondents which we have demonstrated to be highly successful in terms of cost effectiveness and relocation rates. We invite further refinement and documentation of the methods.

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APPENDICES

EXAMPLE - PARENT WAVE ONE LETTER

EXAMPLE - PARENT WAVE TWO LETTER

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EXAMPLE - MAILING ENVELOPES USED

WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON 99164

CAREER DEVELOPMENT STUDY
SOCIAL RESEARCH CENTER

EXAMPLE - WAVE ONE LETTER

January 9, 1978

Mr. and Mrs. Call
4130 South Cook Street
Spokane WA 99203

Dear Mr. and Mrs. Call:

In 1966 your son, Vaughn, took part in a statewide study of the educational and occupational plans of Washington high school students. At that time more than 7000 students reported how much more education they hoped to receive and what occupations they wanted to pursue. Each provided an address where we might be able to locate them in later years. Vaughn listed your name and address.

More than 10 years have passed and we are now studying whether those same youth have met their educational and occupational goals. Similar studies have been completed in the eastern states, but as yet little is known about the career problems experienced by youth who attended Washington and western high schools. This scientific study will help to answer some of the questions and problems which deeply concern many parents who are trying to help their sons and daughters prepare for the future.

We ask for your help in continuing the important research in which Vaughn took part while in high school. Young people tend to move around quite a bit and we need to reach all of the students who participated in the original study. Therefore, we are contacting you and the parents of your son's classmates in order to locate the young men and women who participated in the study.

Enclosed is a card with Vaughn's name and your name and address. Please fill in Vaughn's current address and any change in name so that we may write to him to explain the continuing study. The information will remain confidential.

If you have any questions please contact: Dr. James F. Short, Jr., Social Research Center, Washington State University.

Thank you for your help.

Sincerely,

Luther B. Otto

LUTHER B. OTTO, Ph.D.
Project Director

WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON 99164

CAREER DEVELOPMENT STUDY
SOCIAL RESEARCH CENTER

EXAMPLE - WAVE TWO LETTER

January 18, 1978

Mr. and Mrs. Call
4130 South Cook Street
Spokane WA 99203

Dear Mr. and Mrs. Call:

Last week we wrote to you and asked for Vaughn's forwarding address so that he could take part in the continuing study of Washington youth.

If you have already returned the card, we greatly appreciate your prompt assistance. If you have not returned it, simply complete the enclosed card by providing Vaughn's current address and any name change. Please mail it today.

It is very important that we reach all of the individuals who were part of this scientific study when they were younger.

Thank you very much.

Sincerely,

Luther B. Otto

LUTHER B. OTTO, Ph.D.
Project Director

WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON 99164

CAREER DEVELOPMENT STUDY
SOCIAL RESEARCH CENTER

EXAMPLE - WAVE THREE LETTER

February 7, 1978

Mr. and Mrs. Call
4130 South Cook Street
Spokane WA 99203

Dear Mr. and Mrs. Call:

About three weeks ago we wrote to you asking for the forwarding address of your son, Vaughn. We have not yet received a reply.

About 10 years ago, Vaughn was part of a long-term study of Washington youth. We now need to make contact again with him in order to update the information he provided to us while in high school. It is important that we be able to contact your son and we ask for your help in providing his forwarding address and any name change.

Please assist this important research by completing the enclosed form. Note Vaughn's current address and any name change and mail the card immediately. We anxiously await your reply.

Thank you very much for your cooperation.

Cordially,

Luther B. Otto

LUTHER B. OTTO, Ph.D.
Project Director

WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON 99164

CAREER DEVELOPMENT STUDY
SOCIAL RESEARCH CENTER

EXAMPLE - WAVE FOUR LETTER

March 9, 1978

Mr. and Mrs. Call
4130 South Cook Street
Spokane WA 99203

Dear Mr. and Mrs. Call:

Earlier we asked for your help in obtaining a current forwarding address for your son, Vaughn. A reply to our letters has not yet been received.

As you know, parents are very concerned about helping their children choose the career which is right for them. We are greatly encouraged by the assistance that other parents have given us. The success of this study depends heavily upon Vaughn being able to let us know his experiences since high school. He may be able to give us insights that cannot be provided by his high school classmates.

It is important that we contact your son and we are sending this letter by certified mail to insure delivery. Vaughn and his classmates began this study with us when they were in high school. Please complete and return the enclosed card. This will enable us to write to him to explain the continuing study.

Thank you very much for your help.

Sincerely,

Luther B. Otto

LUTHER B. OTTO, Ph.D.
Project Director

EXAMPLE - RETURN CARD ENCLOSURE

Please...

Help make this study a success by filling out this form (both sides) and mailing it TODAY. A pre-addressed, postage-paid envelope is provided for your convenience.

1. What is Vaughn's current name and address? (Please print)

Name_____
(first) *(middle)* *(last)*

Street_____

City_____ State_____ Zip_____

Phone number ( )_____

Form No. 123456

Over

2. Please indicate your full name and address on the lines below:

Name_____
(first) *(middle)* *(last)*

Street_____

City_____ State_____ Zip_____

Phone number ( )_____

1

THANK YOU FOR YOUR HELP

WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON 99164

CAREER DEVELOPMENT STUDY
SOCIAL RESEARCH CENTER

EXAMPLE - REUNION WAVE 1 LETTER

February 22, 1978

Mr. Vaughn Call
4130 South Cook Street
Spokane, WA 99203

Dear Mr. Call:

In the spring of 1966 you were part of a very large study of the educational and occupational goals of high school students. More than 7000 students from the State of Washington reported on their educational and occupational plans. At that time you, like your classmates, gave us an address where we might be able to contact you in later years. We are now updating these addresses and need to verify your current mailing address.

More than 10 years have passed since that study of high school students. We are now studying the same group of people. We are finding out whether they have been able to accomplish the educational and occupational goals they had while in high school. Similar studies have been completed in the eastern states, but as yet little is known about the career problems and experiences of youth who attended Washington and western high schools. This scientific study is designed to resolve some of the problems which concern parents who are trying to help their sons and daughters prepare for the future.

We need your help in continuing this important research in which you took part while at West Valley High School. We will be sending out information about the continuing study and we want to forward it to you directly.

Enclosed is a card requesting verification of your current address and any change in name since 1966. Please return it in the enclosed stamped envelope so that we can proceed with the study.

If you have any questions about the study, contact Dr. James F. Short, Jr., Director, Social Research Center, Washington State University.

Thank you for your help.

Sincerely,

Luther B. Otto

LUTHER B. OTTO, Ph.D.
Project Director

LBO:cas
Enclosures

WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON 99164

CAREER DEVELOPMENT STUDY
SOCIAL RESEARCH CENTER

EXAMPLE - REUNION WAVE 2 LETTER

March 3, 1978

Mr. Vaughn Call
4130 South Cook Street
Spokane, WA 99203

Dear Mr. Call:

Last week we wrote asking for confirmation of your current address. We want to send information explaining the continuation of a study you participated in while attending West Valley High School.

If you have already returned a card, accept our thanks for your prompt assistance. If you have not returned it, simply complete the enclosed card by providing your current address and any name change. Please mail it today.

It is very important that we reach everyone who has been part of this scientific study.

Thank you very much.

Sincerely,

Luther B. Otto

LUTHER B. OTTO, Ph.D.
Project Director

LBO:cas
Enclosure

WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON 99164

CAREER DEVELOPMENT STUDY
SOCIAL RESEARCH CENTER

EXAMPLE - REUNION WAVE 3 LETTER

March 22, 1978

Mr. Vaughn Call
4130 South Cook Street
Spokane, WA 99203

Dear Mr. Call:

About three weeks ago we wrote requesting confirmation of your current address. We have not yet received a reply.

Approximately 10 years ago you were part of a long-term study of Washington youth. We now need to make contact with you again in order to update the information you provided us while attending West Valley High School.

We ask for your help in verifying your current address and any name change.

Please assist this important research by completing the enclosed form. Mail the card today. A stamped, addressed envelope is provided for your convenience. We await your reply.

Thank you very much for your cooperation.

Cordially,

Luther B. Otto

LUTHER B. OTTO, Ph.D.
Project Director

EXAMPLE - REUNION
RETURN CARDS

Please...

Help make this study a success by filling out this form (both sides) and mailing it **today.** A pre-addressed, postage-paid envelope is provided for your convenience.

1. Please indicate your full name and address on the lines below: *(Please print)*

Name_____
(first) *(middle)* *(last)*

Street_____

City_____ State_____ Zip_____

Phone number ( )_____

Form No. 123456

Over

2. What is the current address for your parents?

Name_____
(first) *(middle)* *(last)*

Street_____

City_____ State_____ Zip_____

Phone number ( )_____

5

THANK YOU FOR YOUR HELP

EXAMPLE - MAILING ENVELOPES USED

CAREER DEVELOPMENT STUDY
SOCIAL RESEARCH CENTER
WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON 99164

MAIL-OUT #10 ENVELOPE (REDUCED)

CAREER DEVELOPMENT STUDY
Social Research Center
Washington State University
Pullman, Washington 99164

STAMPED RETURN #9 ENVELOPE (REDUCED)

FIRST CLASS
PERMIT NO. 1
PULLMAN,
WASHINGTON

Business Reply Mail
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES
POSTAGE WILL BE PAID BY

CAREER DEVELOPMENT STUDY
Social Research Center
Washington State University
Pullman, Washington 99164

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RETURN #9 ENVELOPE (REDUCED)